

REMARKS

Claims 1, 2 and 4-9 are pending in the application. New claims 10-14 have been added. Claim 5 has been amended for consistency.

Claims 1, 2 and 4-9 stand rejected under 35 USC § 102(b) as anticipated by Mullane. Claim 1 has been amended to more particularly define the claimed invention in a manner that it is neither taught nor suggested by Mullane or the other art of record.

Claim 1 now defines an inherent longitudinal axis, and require that the bone anchoring element and threaded shaft each include respective end faces, wherein contact between such faces delimits the extent of movement of the spherical articulation of the bone anchoring element and the threaded shaft. In addition, claim 1 also requires that the “rotational linkage means” which is “capable of rotationally locking the bone anchoring element and the threaded shaft” is situated on the longitudinal axis. These features are described in ¶¶ 0022 and 0023 and shown Figs. 1 and 2. No new matter has been added to the claim.

In order to support a rejection of a claim under 35 U.S.C. § 102(b), “[t]he identical invention must be shown in as complete detail as is contained in the . . . claim” **in a single reference.** *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Mullane fails to support a rejection under 102(b) because in the Mullane device respective end faces on the bone anchoring element and the threaded shaft do not delimit the extent of movement of the spherical articulation. In Mullane, the

articulation is delimited by curved surfaces on median 36 that engage inner edge of aperture 22 on attachment cap 24. The aperture is (1) not defined on an end face and (2) not defined on either a bone anchor or a threaded shaft; it is radially about an opening on the attachment cap. Further, in Mullane the structure that rotationally locks the bone anchoring element relative to the threaded shaft is not situated on the longitudinal axis. In fact it must be located radially offset from the axis, as it is also provided on the screw cap, which extends over the threaded shaft, and therefore cannot be on either of the bone anchoring element or the threaded shaft. Therefore, it is respectfully submitted that Mullane fails to teach or suggest the claimed invention. New claims are also allowable for reasons advanced above and therefore are also not anticipated by Mullane.

Claims 1, 2 and 4-8 stand rejected under 35 USC § 103(a) as unpatentable over Bernhardt in view of Altarac. The applicant respectfully traverses the rejection for the following reasons.

Claim 1 requires a device in which “contact between the first and second end faces delimit the extent of movement of the spherical articulation.” This is not shown or suggested in the devices of Bernhardt or Altarac. In both of these devices, the extent of articulation is limited by contact between the shaft and the space available at the upper aperture through which the shaft extends. In addition, claim 1 requires “rotational linkage means “situated on the longitudinal axis ... capable of rotationally locking the bone anchoring element and the threaded shaft,” in which the rotational linkage means comprises cooperating male and female geometrical forms having non-circular

transverse cross-sections and “delimiting therebetween a clearance.” The Examiner has pointed to structure in Altarac (70, 72, 74) as meeting the claimed limitation. However, such structure does meet the claimed terms for the following reasons. Altarac states that a resilient spindle 72 is provided within cavity 74 of bone screw 12’ and operates against hollow recess 70 of post member 20. The purpose of this assembly is for the resilient spindle to bias the post member within the cavity of the cage “so that it is more apt to stay in a position in the cage before it is tightened (i.e. it is less apt to flop).” (¶0021) Thus, spindle is a temporary biasing member which must be in contact with the post member within the recess in order to function; i.e., provide its biasing force. There is no teaching, in either the written description or drawings of Altarac, that the spindle and/or hollow recess operate to restrict rotational movement or that they have cooperating male and female geometrical forms having non-circular transverse cross-sections. There is nothing in the structure between the bone screw 12’ and the post member 20 to prevent axial rotation between the two, even as the spindle biases the head of the bone screw 20. The post member 20 is able to rotate relative to the tip of the spindle and about the bone screw 12’, even while biased by the resilient spindle. Moreover, clearly the spindle could not perform such biasing if the claimed “clearance” were provided between the male and female non-circular forms. Therefore, it is respectfully submitted that Bernhardt in view of Altarac fail to suggest the inventions of claims 1, 2 and 4-9.

New claim 10 also requires that the rotational linkage means includes both complementary male and female non-circular geometrical forms on the longitudinal axis cooperating and with a clearance therebetween. For reasons advanced above with respect

to claim 1, it is respectfully submitted that the invention of claim 10 is patentable over Bernhardt in view of Altarac.

Claim 11 requires a device in which “contact between the first and second end faces [of the bone anchoring device and thread shaft] delimit the extent of movement of the spherical articulation.” This is not shown or suggested in the devices of Bernhardt or Altarac. As discussed with respect to claim 1, in both the Bernhardt and Altarac devices, the extent of articulation is limited by contact between the shaft and the space available at the upper aperture through which the shaft extends, not by any contact between first and second end faces on the bone screw 12’ and the post anchor 20. Further, while the resilient spindle prevents ‘flopping’ of the post member, it does not “delimit the extent of movement” of spherical articulation. Therefore, it is respectfully submitted that claim 11 is patentable over Bernhardt in view of Altarac.

Claim 12 requires that the rotational linkage means includes a recess having a non-circular geometric form in cross-section transverse to the longitudinal axis. As discussed above, there is no teaching in Altarac for the recess to be any other than circular in cross-section. In fact, to have any shape other than circular would prevent the device from function properly as it would prevent the device from being biased evenly in all directions, which is not taught, suggested or desired.

Claims 13 and 14 requires that one of the faces is flat (claim 13) and the other of the end faces is convex (claim 14). This is not shown or suggested by Bernhardt in view

of Altarac, which teach a combination of convex and concave end faces (facing each other) defining an articulating ball and socket.

In light of all of the above, it is submitted that the claims are in order for allowance, and prompt allowance is earnestly requested. Should any issues remain outstanding, the Examiner is invited to call the undersigned attorney of record so that the case may proceed expeditiously to allowance.

Respectfully submitted,

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